Wind Energy Technical Workshop
January 26, 2003

Customer Agreement on Wind Issues	**Customer Disagreement on Wind Issues**	**Wind Issues Identified for further Discussion**	**Parking Lot**
1. Wind Customers pay its own costs for development of Wind Energy Proposal	1. Capacity Costs – a) Wind Resources have little value b) Used to apply	1. Listing of unit availability ("part of proposal")	1. Characterization of Penalties
2. Better forecast requirements	2. Wind resource should be treated different than other resources because of its inherit unpredictability	2. Automation of generation estimate – including forecasting.	2. Should capacity be considered in net deviation (as well as energy)?
3. Need defined costs imposed by wind	3. Penalties vs costs based charges, e.g. 90/110	3. E-tagging – timing of scheduling windows	3. All resources should be treated the same?
4. Wind has no dispatch able capacity value		4. Sharing of wind information to learn what all integration costs may be	4. Costs at current level of wind vs self supply window
			5. Time horizon for forecasting a) Short enough to be unbiased b) Other
			6. Identify issues of Wind Proposal that impact current rates
			7. Identify issues of Wind Proposal that can move forward in current rate case

Additional notes:

A. Concept of Redesign
   1. What does "best efforts" mean?
   2. Will Wind customers spend their own $$ to develop accurate forecasting tools?

3 Yielding scheduling flexibility –

4. Some customers asked what the wind folks were giving up? a) Gaming, b) dead band, c) Control, d) TBL will schedule whatever the forecast is.
5. Some customers claimed that wind customers never had control over resource for scheduling purposes to begin with.
6. Wind forecast model adjust wind F/C every hour. If wind generator isn't doing F/C, who is going to spend money on a good F/C? Independent forecaster.
7. Some customers oppose to giving up flexibility but if the Region promotes alternative, so be it.

B. Details of Redesign

1. Certification of wind forecast – a) TBL, b) Independent Certified Forecaster, c) ??
2. Would need to include resource/unit for re-dispatching purposes

C. Impacts of Redesign

1. Create a F/C that is unbias
2. Hourly basis takes the different on individual wind project basis
3. What's the price at the end of the month
4. Moving from Hourly to a system cost
5. Deem delivered schedule and get no imbalance charge
6. Can predict fairly accurately in a forward market
7. Wind projects come fairly close to predicting generation for 3 months but accuracy begins to decline the closer to real time schedules.
8. TBL re-computes regulation every 5 minutes using exact variability for wind as what TBL uses for load variability in rate case.
9. TBL does not adjust regulation due to wind generation
10. ISO looks at wind every 10 minutes and concluded that they don't need to bring on resource.
11. NW doesn't have 10 minute redispatch.
12. Market moves on a 10 minute basis.
13. TBL requires both energy and generation customers perform their own forecasting.
14. The load forecast model adjusts its F/Cs every 3 months.
15. With regard to alternative resources, only wind is considered unpredictable.
16. Proposal does not address capacity – PBL addresses hour-to-hour capacity as part of its integration costs.
17. Integration/capacity question – Much more complicated to buy capacity than energy. Need to look at capacity costs to assess wind proposal.
18. Who is responsible for regulating capacity?
19. Don't want to be held responsible for increase costs in rates.
20. Alternative resource may cost more.
21. Is 90-110 a penalty? Is 72/25 a cost?. FERC reading is that if we have to go to market we are entitled to cost +10%. Purpose of penalty is to try and recover energy component of capacity.